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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,040	08/15/2001	Kiyohiko Yoshida	520.40489X00	1875

24956 7590 04/19/2005

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EXAMINER	
D AGOSTA, STEPHEN M	

ART UNIT	PAPER NUMBER
2683	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/929,040	YOSHIDA ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9 and 10* is/are allowed.

6)☒ Claim(s) *1,2 and 5-7* is/are rejected.

7)☒ Claim(s) *3,4 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

1. The applicant has amended the drawings and overcomes the examiner's objection.

2. The examiner now objects to claims 3-4 and 8 while allowing claims 9-10.

3. The examiner has modified his original rejection based on the applicant's claim amendments (see below).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen US 6,587,457 and Backstrom et al. US 5,229,996 (hereafter Mikkonen and Backstrom).

As per **claim 1**, Mikkonen teaches a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5") connected between a communications network and a plurality of BTS's each of which conducts communications with a plurality of mobiles via radio channels (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown as MT), for transferring packets received from said communications network to a one of said BTS accommodating a plurality of destination mobiles of the received packets (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Storing means for storing packets received from said communication network correlating the packets with the destination mobile station (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP

requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64),;

Receiving means for receiving a control message from each BTS, the control message including rate transfer information of packet transmission (figure 3 shows background processes that run on the APC/Mobile router including a Wireless Admission control #304, Flow Manager #302, Management Agent (not numbered), QoS manager #306 and Flow Policer, #301. Figure 5 depicts how the processes perform routing of data packets based on extracted control/setup information) between the BTS and each one of mobile stations under control of the BTS (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

Control means for reading out packets destined for specific mobile stations from said storing means in accordance with the contents of the control message received by said receiving means and transmitting the packet to the BTS to which the specific mobile stations are connected (figure 3 shows a Flow Manager, #302 and QoS manager #306 which inherently provide traffic flows based on requested QoS and the loading of the communication links in real-time which reads on the claim. The examiner also notes that figure 5 shows allocation of radio resources #506, allocation of "wired" resources #507 and flows being mapped #509),

But is silent on periodic reception of control messages.

Backstrom teaches cellular/wireless data transmission (C1, L9-40) whereby "...Time-alignment adjustments may be directed by the base station as necessary using a field of a physical layer control message as illustrated in FIG. 2b. The physical layer **control message is periodically issued** on a "fast-access control channel" (FACCH) and/or a "slow-access" control channel (SAACH) defined between the base station and the mobile station. The time-alignment field of the physical layer control message includes, in one embodiment, 9 bits, the first 4 bits designating time-alignment as the parameter being affected and the remaining 5 bits specifying the amount of time adjustment in terms of half-symbol times. In other words, the mobile station is ordered to transmit some time amount before the standard offset reference...." (C3, L40-60). Hence one skilled would use Backstrom's generic teaching of periodic control message transmissions to continuously update the mobile with information regarding the rate of packet flow between BTS and mobile.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that control means are sent periodically, to provide means updating the mobile regarding data/transfer rate information.

As per **claim 2**, Mikkonen teaches claim 1 **but is silent on** wherein said storing means stores packets received from said communication network correlating the packets with a group of mobile stations.

The examiner notes that Mikkonen teaches the use of the TCP/IP protocol which supports Unicasting (1-to-1) and Multicasting (1-to-many) where multicasting reads on the claim. The purpose of Multicasting is to allow one server to transmit one data stream which is received by multiple end-users, thereby conserving bandwidth. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that stored packets can be correlated to a (multicast) group of users, to conserve bandwidth when sending the same data to multiple end-users.

As per **claim 7**, Mikkonen teaches a wireless communication system (figure 2) comprising a plurality of BTS's each for performing communications with a plurality of mobile stations in their control areas via radio channels (figure 2, BTS shown as AP1, AP2, #4, #4') and a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5'') and a connection between said plurality of BTS's and a communications network (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Wherein each of said BTS's has means for receiving from each of mobile stations in control area a notification of a transmission rate, calculated based on a signal received from the BTS, and means for generating a control message for designating a packet transfer rate for each mobile and transmitting the control message to said PTA (figure 3 shows flow manager #302 and Qos Manager #306 and figure 5 shows setup/control for link(s) between mobile, BTS and APC/PTA. Also see C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

Said PTA has means for storing packets received from said communication network for each destination mobile and selectively transferring the packets to each of said BTS's at a packet transfer rate peculiar to the destination mobile designated by the control message (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64),

But is silent on periodical control messages.

Backstrom teaches cellular/wireless data transmission (C1, L9-40) whereby "...Time-alignment adjustments may be directed by the base station as necessary using a field of a physical layer control message as illustrated in FIG. 2b. The physical layer **control message is periodically issued** on a "fast-access control channel" (FACCH) and/or a "slow-access" control channel (SAACH) defined between the base station and

the mobile station. The time-alignment field of the physical layer control message includes, in one embodiment, 9 bits, the first 4 bits designating time-alignment as the parameter being affected and the remaining 5 bits specifying the amount of time adjustment in terms of half-symbol times. In other words, the mobile station is ordered to transmit some time amount before the standard offset reference...." (C3, L40-60). Hence one skilled would use Backstrom's generic teaching of periodic control message transmissions to continuously update the mobile with information regarding the rate of packet flow between BTS and mobile.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that control means are sent periodically, to provide means updating the mobile regarding data/transfer rate information.

Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen/Backstrom and further in view of Maxemchuk US 6,411,810 (hereafter Maxemchuk).

As per **claim 5**, Mikkonen teaches a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5") connected between a communications network and a plurality of BTS's each of which conducts communications with a plurality of mobiles via radio channels (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown as MT), for selectively transferring packets received from said communications network to a BTS accommodating destination mobiles of the received packets (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Storing means for storing packets received from said communication network correlating the packets with each of the destination mobile station (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64),;

Receiving means for receiving a control message from each BTS the control message being being indicative of a rate of packet transmission between the BTS for each of mobile stations under control of the BTS (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514), **But is silent on** Control means for calculating a total value of packet transfer rates of a plurality of mobile station under control for each BTS from the control message received by said receiving means, when the total value of the packet transfer rates exceeds an

upper limit value of the rate of data transfers between the packet transfer apparatus and the BTS, decreasing the packet transfer rates of said plurality of mobiles at a predetermined ratio, reading out packets destined for said mobiles from said storing means in accordance with the decreased packet transfer rates, and transmitting the packets to the BTS to which the mobile stations are connected and periodic control messages.

The examiner notes that Mikkonen does teach flow control and QoS which reads on control means to decrease data transfers but puts forth **Maxemchuk** who teaches a cellular arrangement whereby the BTS can detect overload conditions and lower (and/or raise) the data rate of the mobile (title, abstract and C1, L65 to C2, L28). One skilled can adapt/integrate this feature with Mikkonen's flow control and QoS operations.

Backstrom teaches cellular/wireless data transmission (C1, L9-40) whereby "...Time-alignment adjustments may be directed by the base station as necessary using a field of a physical layer control message as illustrated in FIG. 2b. The physical layer control message is periodically issued on a "fast-access control channel" (FACCH) and/or a "slow-access" control channel (SAACH) defined between the base station and the mobile station. The time-alignment field of the physical layer control message includes, in one embodiment, 9 bits, the first 4 bits designating time-alignment as the parameter being affected and the remaining 5 bits specifying the amount of time adjustment in terms of half-symbol times. In other words, the mobile station is ordered to transmit some time amount before the standard offset reference...." (C3, L40-60). Hence one skilled would use Backstrom's generic teaching of periodic control message transmissions to continuously update the mobile with information regarding the rate of packet flow between BTS and mobile.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that control means calculates packet transfer rates and decreases rates if/when high loading occurs via periodic control messages, to provide means for supporting all/many mobile users by decreasing their transmit rates as bandwidth diminishes via QoS via periodic updates.

Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen/Backstrom and further in view of Kim et al. US 6,510,145 (hereafter Kim).

As per **claim 6**, Mikkonen teaches a base station for conducting communication with a plurality mobile stations via radio channels and a communications network (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown as MT and data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

A receiving unit for receiving information which designates forward link transmission rate from each of mobiles under control **AND** a transmitter for reading out the packets stored in said buffer memory in accordance with the forward link transmission rate designated by the destination mobile thereof, and transmitting the packets to a radio channel corresponding to the destination mobile. (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired

network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

A controller for generating a flow control message for designating a rate of packet transfer from said packet transfer apparatus (PTA) to the BTS in accordance with the forward link transmission rate designated by each mobile and transmitting the generated message to said PTA (figure 3 shows a Flow Manager, #302 and QoS manager #306 which inherently provide traffic flows based on requested QoS and the loading of the communication links in real-time which reads on the claim. The examiner also notes that figure 5 shows allocation of radio resources #506, allocation of "wired" resources #507 and flows being mapped #509);

A buffer memory for storing packets destined for said mobiles, which are received from said PTA (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64); and

But is silent on the base station constructing a wireless communication system together with a packet transfer apparatus (PTA) and periodic control messages.

The examiner notes that one skilled would provide for the PTA to either be integrated into the BTS or an outboard piece of hardware - the PTA would be outboard for an already existing BTS but can be bought as one integrated system for future installations. Further to this point is **Kim** who teaches an apparatus for providing a forward packet data service of a base station in a CDMA communication system, comprising: a packet control channel transmitter for transmitting a packet control message; a forward packet traffic channel transmitter for transmitting a packet data to a designated terminal in an assigned slot period; and a base station packet controller for generating the packet control message when generating the packet data to be transmitted in a packet idle state, said packet control message including information for assigning the slot period of the forward packet traffic channel and the terminal to be assigned the forward packet traffic channel, assigning the forward packet traffic channel in the assigned slot period, releasing the assigned forward packet traffic channel after transmitting the packet data and transitioning to the packet idle state (see claim 10).

Backstrom teaches cellular/wireless data transmission (C1, L9-40) whereby "...Time-alignment adjustments may be directed by the base station as necessary using a field of a physical layer control message as illustrated in FIG. 2b. The physical layer control message is periodically issued on a "fast-access control channel" (FACCH) and/or a "slow-access" control channel (SAACH) defined between the base station and the mobile station. The time-alignment field of the physical layer control message includes, in one embodiment, 9 bits, the first 4 bits designating time-alignment as the parameter being affected and the remaining 5 bits specifying the amount of time

adjustment in terms of half-symbol times. According to a preferred embodiment, the timing of the mobile station may be advanced up to 30 half-symbol times from the standard offset reference or may be retarded, but only back to the standard offset reference. In other words, the mobile station is ordered to transmit some time amount before the standard offset reference...." (C3, L40-60). Hence one skilled would use Backstrom's generic teaching of periodic control message transmissions to continuously update the mobile with information regarding the rate of packet flow between BTS and mobile.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that the BTS is constructed with a PTA and transmits periodic control message, to provide a BTS which functions as one unit so that data links are not required between the BTS and packet control function which speeds processing (eg. local bus connection vs. wired link) and to update the mobile with packet flow information.

Allowable Subject Matter

Claims 9-10 allowed.

1. Claim 9 has been amended to claim a more detailed design which is novel in the examiner's opinion over the prior art of record – ie. added "plurality of rate classes for each BTS", "buffer areas correlated to said rate classes" and "control messages indicating window size with each rate class".

2. Claim 10 recites a highly specialized design whereby the examiner believes the novelty to be focused on:

A **BTS** comprising:
- A buffer memory divided into a plurality of rate class areas
- Means for generating a control message for instructing a transfer amount of packets from said PTA to the BTS at each rate class in accordance with a free space in each rate class area
- Means for storing a packet received from the PTA into a rate class area
- Means for reading out packets at a rate corresponding to a rate class from each rate class area in said buffer memory; and

A **PTA** comprising:
- means for grouping packets received from the communication network into rate classes according to data transmission rates of destination mobiles and buffering of packets,
- means for reading out packets in accordance with a transfer amount of each rate class indicated by the control message.

3. **Claims 3-4 and 8** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These claims, when amended to their corresponding independent claim, recite novel material (in the examiner's opinion) which is not found in the prior art of record.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen D'Agosta
PRIMARY EXAMINER
3-31-2005